

Application No. 10/696,047  
Amendment Dated March 7, 2007  
Reply to Office Action of January 30, 2007

### **REMARKS/ARGUMENTS**

By this Amendment, claims 2, 11, 16-18 and 20-28 are amended, claim 1 is canceled and claims 29-30 are added. Claims 2-30 are pending.

Favorable reconsideration is respectfully requested in view of the foregoing amendments and the following remarks.

Entry of this Amendment is proper under 37 C.F.R. §1.116 because the Amendment: (a) places the application into condition for allowance (for reasons discussed herein), (b) does not raise any new issues requiring further search and/or consideration (because the Amendment is directed to subject matter previously considered during prosecution), (c) does not present any additional claims without canceling a corresponding number of finally rejected claims, and (d) places the application into better form for appeal, should an appeal be necessary. Thus, Applicants respectfully request entry of the Amendment.

The Examiner sets forth that claim 1 (and its respective dependent claims 2-28) is objected to for the following reason. According to the Examiner, since the intended meaning could be determined from the specification and the Figures, a 112 rejection was not made but instead this lack of clarity issue is being raised in the following claim objection.

The Examiner believes that specifically, part of the claim stating “performing said medical procedure on said eye in accordance with said iris biometric image” creates a lack of clarity. Specifically, the Examiner believes that the biometric image does not state what procedure to perform but instead provides information (such as detecting a tumor) from which it is then determined what procedure to perform. The Examiner sets forth that for purposes of examination the assumed meaning is “performing said medical procedure on said eye in accordance with information provided by said iris biometric image”.

The Examiner further sets forth that claim 28 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

Specifically, the Examiner believes that the claimed “wherein said feature” lacks an antecedent basis and it is not clear if the dependency of the claim is incorrect (and if so, what claim, claim 28 was meant to depend from) or if some additional limitations were inadvertently omitted and the lack of clarity renders the claim vague and indefinite. According to the Examiner for purposes of examination, it is assumed that claim 28 meant to depend from claim 18.

The Applicants submit that the claims have been amended accordingly.

The Examiner sets forth that claims 1-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Hohla et al. Patent No. 7,146,983.

The Examiner believes that Hohla reads on these claims by disclosing the limitations therein including the following: a method for performing a medical procedure (the Examiner directs the Applicants’ attention to Figure 1, column 10, line 25 to column 11, line 17) comprising obtaining an iris biometric image representative of an iris of an eye (the Examiner directs the Applicants’ attention to column 10, lines 5-24, column 10, lines 58-61, column 11, line 9); and performing a medical procedure on an eye based upon the information provided by the biometric image (the Examiner directs the Applicants’ attention to column 10, line 25 to column 11, line 17, column 12, lines 19-44). According to the Examiner, Hohla further discloses obtaining first and second biometric images and comparing them to provide a biometric comparison result (the Examiner directs the Applicants’ attention to column 12, lines 19-44, column 16, lines 63-67); identifying an eye or iris in accordance with the result (the Examiner directs the Applicants’ attention to column 10, line 57 to column 11, line 17); the eye having at least one feature which is represented by at least one biometric image (the Examiner further directs the Applicants’ attention to column 11, lines 25-45, column 11, line 35, claim 11); performing the medical procedure in accordance with the identifying (the Examiner further directs the Applicants’ attention to Figure 1, column 10, line 25 to column 12, line 44); determining a location, orientation, translation or altering a relative location of the iris in accordance with the at least one feature (the Examiner further directs the Applicants’ attention to column 2, lines 38-45, column 10, line 57 to column 11, line 17); directing a light beam in accordance with the at least one feature (the Examiner further directs the Applicants’ attention to column 5, lines 26-51); providing

an optimized image in accordance with an image quality metric and to emphasize a visualization of a selected feature (the Examiner further directs the Applicants' attention to column 5, lines 26-51); providing an optimized image in accordance with an image quality metric and to emphasize a visualization of a selected feature (the Examiner further directs the Applicants' attention to column 10, line 58 to column 11, line 24, column 13, lines 27-38); performing a surgical procedure (the Examiner further directs the Applicants' attention to column 10, line 25 to column 11, line 17); locating a tumor (the Examiner further directs the Applicants' attention to column 11, line 31); performing a diagnostic of an eye (the Examiner further directs the Applicants' attention to column 10, line 36); superimposing light beams to provide a composite image (the Examiner further directs the Applicants' attention to column 16, line 64); and correcting an aberration (the Examiner further directs the Applicants' attention to column 19, line 27). In addition to setting forth the foregoing, the Examiner sets forth that the claimed "performing an optical biopsy", measuring the size of a feature within the eye such as a tumor or lesion" would be inherent in the method of Hohla depending upon what information was disclosed by the biometric image according to the Examiner. Specifically, the Examiner believes that of a medical diagnostic discloses some adverse condition of the eye that requires a medical procedure then inherently the medical procedure will be performed based upon this information provided by the biometric image. The Examiner sets forth that for example, if the diagnostic discloses a tumor or lesion, then inherently its size would be determined.

The Examiner further sets forth that claims 1-20, and 23-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Wilkes et al patent number 5,751,836. (The Applicants believe that the Examiner intended to set forth Wildes. Applicants will proceed based on this assumption.)

The Examiner further sets forth that Wilkes reads on these claims by disclosing the limitations therein including the following: a method for performing a medical procedure (the Examiner directs the Applicants' attention to column 1, lines 35-45) comprising obtaining an iris biometric image representative of an iris of an eye (the Examiner further directs the Applicants' attention to abstract, column 1, lines 35-45, column 3, lines 10-40); and providing a medical diagnostic of an eye i.e. "performing a medical procedure" based upon the biometric image (the Examiner further directs the

Applicants' attention to column 1, lines 42-45). Furthermore, the Examiner believes that the method disclosed by Wildes will inherently perform a medical procedure on an eye based upon the information provided by the biometric image this being reasonably based upon Wildes disclosing that the biometric imaging can be used to provide a medical diagnostic discloses some adverse condition of the eye that requires a medical procedure then inherently the medical procedure will be performed based upon this information provided by the biometric image. According to the Examiner, Wildes further discloses obtaining first and second biometric images and comparing them to provide a biometric comparison result (the Examiner further directs the Applicants' attention to column 1, lines 35-45, column 3, lines 10-31); identifying an eye or iris in accordance with a biometric comparison result (the Examiner further directs the Applicants' attention to column 2, lines 3-62, column 4, lines 51-62); the eye having at least one feature which is represented by at least one biometric image (the Examiner further directs the Applicants' attention to column 2, lines 30-35, in which the "feature" could be the "limbic boundary of the iris", the "boundaries of the eyelids" or whatever is detected by the diagnostic); determining a location of the iris in accordance with the at least one feature (the Examiner further directs the Applicants' attention to column 7, line 65 to column 8, line 67) according to the Examiner. The Examiner further believes that the procedure of Wildes will inherently require determining orientation and translation of the iris this being reasonably based upon Wildes discloses sequentially locating various features of the iris and pattern matching the image to a stored image from a database (the Examiner further directs the Applicants' attention to column 7, line 65 to column 9, line 38) and Wildes disclosing a mapping function constrained to be a similarity transformation i.e. translation, shift scale and rotation according to the Examiner (the Examiner further directs the Applicants' attention to column 9, line 62). The Examiner further sets forth that Wildes further discloses altering a relative location of the iris (the Examiner further directs the Applicants' attention to column 4, lines 6-10 re an alignment mechanism for the purpose of permitting the user to self-position the eye); directing a light beam in accordance with the at least one feature (the Examiner further directs the Applicants' attention to column 3, lines 41-44); providing an optimized image in accordance with an image quality metric and to emphasize a visualization of

a selected feature (the Examiner further directs the Applicants' attention to column 7, lines 5-14, re acquiring a sequence of images until one with the required quality of obtained); performing a comparison of the images for identifying a person within a security verification (the Examiner further directs the Applicants' attention to column 2, line 42, column 4, lines 51-62). According to the Examiner, the claimed "performing a surgical procedure", "performing an optical biopsy", "measuring the size of a feature within the eye such as a tumor or lesion", "correcting an aberration" would all be inherent in the method of Wildes depending upon what information was disclosed by the biometric image. Specifically, the Examiner believes that if the medical diagnostic discloses some adverse condition of the eye that requires a medical procedure then inherently the medical procedure will be performed based upon this information provided by the biometric image. For example, the Examiner believes that if the diagnostic discloses a tumor or lesion, then inherently its size would be determined.

The Examiner further believes that Sadkhin patent number 6,425,860, Watson et al publication number 2002/0097375, and Helbing et al patent number 6,735,328 would all read on or make obvious a number of the above rejected claims, however, such rejections would have been repetitive.

For Applicants' information, the Examiner sets forth that based upon the broadness of some of the claims, particularly claim 1, numerous references would have at least read on this claim. Specifically, the Examiner sets forth that there are known retinal scanning systems used to identify either the correct eye (right or left) or the correct patient prior to surgery so that the surgery is performed on the proper eye or patient i.e. "performing the medical procedure in accordance with information provided by said iris biometric image".

The Examiner further sets forth that Applicants' arguments filed August 3, 2006 have been considered with respect to the Wildes et al reference, but they are not persuasive.

Specifically, the Examiner believes that Applicants argue that Wildes does not disclose performing a medical procedure on an eye. However, according to the Examiner, Wildes discloses performing a medical diagnostic which can be considered as a "medical procedure". Furthermore,

the Examiner believes that the method disclosed by Wildes will inherently perform a medical procedure on an eye based upon the information provided by the biometric imaging. Specifically, the Examiner believes that Wildes discloses that the biometric imaging can be used to provide a medical diagnostic of an eye and, as stated in the rejection above, if the medical diagnostic discloses some adverse condition of the eye that requires a medical procedure then inherently the medical procedure will be performed based upon this provided information.

### **Hohla**

Hohla teaches a system and method for obtaining an image of an iris during a refractive diagnostic analysis. The Hohla image can be used for aligning analysis instruments with the iris for treatment. For example, Hohla teaches using the image for translation, rotation, scaling or other transformational techniques. Furthermore, alignment between different diagnostic tools can be performed using the image.

Additionally, Hohla teaches obtaining information on a cornea for performing procedures on the cornea. For example, the surface topology and thickness of a cornea can be determined using Hohla's teachings. Accordingly, various types of eye surgery can be performed according to the image information. For example, PRK can be applied to the external surface of an eye, and a LASIK procedure can be performed by first resecting a portion of the cornea and then applying laser treatment underneath. Additionally, excimer keratotomy approaches can be applied to refractive correction pursuant to Hohla's teachings.

Thus, the scanning performed by Hohla is used to determine the morphology of the eye in an attempt to reshape it in beneficial ways. There is no teaching of determining differing interactions between various light beams and various eye tissues types according to the properties of the eye tissue in Hohla. There is no teaching of analyzing different eye tissue types to distinguish between the eye tissue types. In particular, Hohla does not teach obtaining iris biometric images of differing eye tissue types according to the interaction of light and different light absorption properties of the different tissue types. Thus, while Hohla does teach performing a medical procedure based upon an iris image,

it is clear that Hohla does not teach distinguishing between the different tissue types and performing a medical procedure based upon distinguishing between tissue types

### **Wildes**

Applicants submit that Wildes teaches an iris acquisition and recognition system and method for identifying individuals. Iris recognition is achieved in Wildes by positioning the eye of a user in the field of view of the system and obtaining a digitized video image of the eye. Pattern matching is performed by comparing the digitized image thus obtained with stored data representative of a previously obtained image. A determination is made on the validity of the pattern matching. The iris recognition taught by Wildes can be used to identify an individual person for the purpose of granting or denying access. For example, the Wildes iris recognition system can be used for controlling access to a secure facility or an automatic transaction machine (ATM). Wildes is completely silent with respect to distinguishing differing eye tissue types according to the light absorption properties of the tissue types.

### **Applicants' System**

The Applicants' invention includes a system and method for clarifying an optical and digital image of an eye and performing a medical procedure upon the eye. Light beams are applied to the eye and reflected from the eye according to the individual absorption properties of differing tissues types. The light beams are of different frequencies wherein different tissue types are determined to have peak absorption at corresponding different frequencies. Electrical signals representative of the reflected light beams are provided and a corresponding plurality of iris biometric images is obtained. The iris biometric images thus obtained can be used as unique identifiers of an individual if desired. However, in accordance with the spirit of the present invention, a medical procedure is performed on the user according to the different iris biometric images and, thus, according to the different light absorption properties of the different eye tissue types.

Therefore, the Applicants' new independent claim 30 sets forth a method for performing a medical procedure on an eye having an iris and a plurality of differing eye tissue types, the tissue types having a corresponding plurality of differing light absorption properties, the method including obtaining a plurality of differing iris biometric images in accordance with a plurality of differing light frequencies which are selected to correspond to the light absorption properties and are separately applied to the eye. Providing the iris biometric images and the differing tissue types with corresponding frequency information in accordance with interactions between the separately applied differing light frequencies and the differing tissue types. Selecting differing tissue types for providing selected differing tissue types to perform said medical procedure the medical procedure on the selected differing tissue types is also recited. Selecting frequencies of the separately applied differing frequencies in accordance with the corresponding frequency information of the selected differing tissue types to provide selected differing frequencies is also recited in new claim 30. The claimed invention also includes performing the medical procedure on the selected differing tissue types in accordance with the separately applied differing frequencies.

### **Patentability**

Significantly, neither Hohla nor Wildes suggests providing iris biometric images with corresponding frequency information in accordance with interactions between the separately applied differing light frequencies and the differing tissue types, and selecting frequencies for performing the medical procedure on the differing tissue types according to the frequencies selected in this manner, as set forth by the Applicants' new independent claim 30. Accordingly, neither reference suggests performing medical procedures on an eye based on differing frequencies determined by the interaction between separately applied frequencies and tissue absorption properties.

Furthermore, neither Hohla nor Wildes suggests obtaining the differing iris biometric images according to the light absorption properties of the eye tissue types and the differing light frequencies, wherein the differing light frequencies are selected to correspond to the light absorption properties of the tissue types, and are separately applied to the eye as recited in the Applicants' new independent



claim 30. The images obtained by Hohla may be obtained according to the light absorption properties of the tissue types, to the extent that all objects that can be imaged must be imaged according to such properties. However, Hohla's images are not obtained according to differing light frequencies which are selected according to the light absorption properties of the tissue types. In fact, there is no selection of light frequencies for application to the eye whatsoever in Hohla. Rather, all frequencies in Hohla are inherently included in the light that is applied and are therefore applied together.

Furthermore, the light beams of both Hohla and Wildes are not applied separately to the eye since they are all merely included in white light. Any separation of frequencies that may occur in Wildes is performed upon the digitized signals within the mathematical filters. It is an important feature of the Applicants' method that the differing light frequencies be applied to the eye separately. The differing light frequencies can not be merely mathematically derived afterward reflection from the eye in order for the Applicants' invention to work properly.

Additionally, with respect to Wildes, any selection of light frequencies that may be performed is performed after the light is applied to the eye, and after the light has been reflected by the eye and digitized. Thus, to the extent that images corresponding to separate frequencies may be created by the focusing and defocusing taught in Wildes, they are not applied to the eye.

Thus, neither Hohla nor Wildes teaches or suggests obtaining differing iris biometric images according to the light absorption properties of the eye tissue types and differing light frequencies which are selected to correspond to the light absorption properties and separately applied to the eye as recited in the Applicants' new independent claim 30.

Additionally, neither Hohla nor Wildes suggests selecting differing tissue types for a medical procedure, and selecting frequencies according to the corresponding frequency information of the selected tissue types, as also recited in the Applicants' new independent claim 30. Rather, both Hohla nor Wildes are silent with respect to a correspondence between differing tissue types and differing light frequencies. Since no such correspondence is suggested, it must follow that there is no teaching of selecting frequencies based on such a correspondence in either reference. Furthermore, it also must

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follow that neither reference teaches or suggests performing the medical procedure on the selected tissue types according to any corresponding selected frequencies.

Thus, neither Hohla nor Wildes suggests selecting differing tissue types for a medical procedure and selecting frequencies for performing a medical procedure on the differing according to the corresponding frequency information of the selected tissue types as also set forth in the Applicants' new independent claim 30.

For at least the foregoing reasons it is believed that claim 30 is in condition for allowance and such action is earnestly solicited from the Examiner. Additionally, since claims 2-29 ultimately depend from claim 30 it is believed that they are patentable for at least the same reasons set forth above.

For at least the reasons set forth above, it is respectfully submitted that the above-identified application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are respectfully requested.

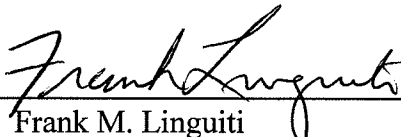
Should the Examiner believe that anything further is desirable in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

CAESAR, RIVISE, BERNSTEIN,  
COHEN & POKOTILOW, LTD.

March 7, 2007

Please charge or credit our Account  
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